EMERGENCY CONTACTS & NUMBERS:

Contact	Person or Agency	Telephone
Ormet Primary Project Coordinator	John Reggi	(614) 483-2659
Emergency	Emergency Response System	911
Law Enforcement	Police Department	911
Fire Department	Fire Department	911
Hospital	Wetzel County Hospital New Martinsville, WV	(310) 455-8000
D&M Project Manager	John Priebe	(513) 651-3440 (work) (812) 537-4317(home)
D&M Principal	Fred Erdmann	(513) 651-3440 (work) (513) 451-8717 (home)
Division Health & Safety Mgr.	Joseph Suhre, P.E.	513-651-3440 (work) 513-791-7431 (home)
EPA National Response Center		1-800-424-8802
Chemtrec		1-800-424-9300

Directions to hospital: Left onto Rt. 7 from Site. Cross Ohio River at first bridge and turn onto Rt. 2 North. At third traffic light, turn right onto East Benjamin Drive. Hospital located on left. (See Figure 3)

REVISION 1

HEALTH & SAFETY PLAN
PRE-DESIGN SAMPLING AND ANALYSIS

ORMET PRIMARY ALUMINUM CORPORATION
SUPERFUND SITE
HANNIBAL, OHIO

JOB NO.: 07983-032-006
Date: MARCH 7, 1996

DAMES & MOORE

DAMES & MOORE

SITE-SPECIFIC HEALTH AND SAFETY PLAN

AND WORKPLACE HAZARD ASSESSMENT

Project Name and Number:	*Ormet Primary Aluminum Corporation*
Project Site Location:	Hannibal, OH
Project Manager:	John Priebe
Site Safety Officer:	_____ (to be assigned)
Plan Preparer:	Lawrence Bloomfield
Plan Reviewer:	Joseph Suhre
Preparation Date:	December 15, 1995 - Revised March 7, 1996
Site work begins:	Following agency approval of Remedial Design Work Plan
Plan expiration Date:	September, 1996

HEALTH AND SAFETY PLAN APPROVAL AND CERTIFICATION THAT WORKPLACE HAZARD ASSESSMENT HAS BEEN PERFORMED (29 CFR 1910.132):

Approval contingent upon receipt of Subcontractor Statement of Compliance before start of work

Project Manager
John Priebe
3/7/96 _____
(Date)

Principal in Charge
Fred W. Erdmann
3/7/96 _____
(Date)

Division Health and Safety Manager
Joseph B. Suhre
3/7/96 _____
(Date)

Plan Health & Safety Approval Log Number CIN-FE/JP-186

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Appendix

1.0 INTRODUCTION

Presented herein is the health and safety plan for site activities to be conducted during the pre-design investigations to support Remedial Design activities at the Ormet Primary Aluminum Corporation Superfund Site in Hannibal, Ohio. The plan details safety procedures for site work, including identification of the site safety officer, field monitoring, protective gear for site workers, site waste characteristics, evaluation of potential site hazards, decontamination procedures, and emergency procedures.

The plan will be amended, as appropriate, to reflect unanticipated hazards or changes in operating conditions encountered during site activities. Site activities will be conducted by the staff of Dames & Moore and its selected subcontractors, if needed.

2.0 APPLICABILITY

The provisions of the plan are mandatory for all onsite Dames & Moore employees engaged in hazardous waste operations who have the potential to be exposed to onsite hazardous substances. All Dames & Moore personnel assigned to field activities for the project must read and sign the plan acceptance form (Appendix A) before commencing site activities. All other personnel entering the site, including representatives of the United States Environmental Protection Agency and Ohio Environmental Protection Agency, must adhere to a site-specific health and safety plan.

Prior to the initiation of field work for each project, all subcontractors will submit, in writing, verification that all field personnel have completed 40 hours of training in accordance with 29 CFR 1910.120(e), that the field supervisor has completed the 8-hour supervisor course in accordance with 29 CFR 1910.120(e)(4), and that field personnel are participating in a medical surveillance program in accordance with 29 CFR 1910.120(f). Such verification should be submitted on the "Subcontractor Compliance Verification" form (Appendix A). The Subcontractor is also responsible for providing, for their own use, a site-specific health and safety plan that meets the requirements of 29 CFR 1910.120(b).

The Subcontractor is expected to provide and maintain its own safety equipment as required under its Health and Safety Program and site-specific health and safety plan. It must also provide information and training to its personnel so that they may comply with that program, and the site-specific health and safety plan.

Inadequate health and safety precautions on the part of the Subcontractor, or the belief that their personnel are, or may be exposed to an immediate health or safety hazard, can be the cause for Dames & Moore to suspend the site work and ask them to evacuate the hazard area.

3.0 SITE CHARACTERIZATION

Ormet Primary Aluminum Corporation (Ormet Primary) operates a primary aluminum reduction facility in Monroe County, Ohio, approximately 2.5 miles north of Hannibal. Ormet Primary's main process has been the reduction of alumina to produce aluminum metal. Over a number years, wastes and by-products from the production activities were placed on a portion of the facility that has subsequently been defined as the Ormet Primary Superfund Site. The Ormet Primary Superfund Site occupies an approximately 47 acre area adjacent to the east of the Ormet Primary aluminum reduction facility, as shown on Figure 1.

The primary units of interest within the Ormet Primary Superfund Site are the Former Spent Potliner Storage Area, the Construction Materials Scrap Dump, the Carbon Runoff and Deposition Area, and the Backwater Area. From approximately 1958 to 1968, spent potliner from aluminum production was placed in an unlined, open area in the northeast part of the site. From 1968 through 1981, much of the potliner was removed and processed for the collection of cryolite. The area where the material was previously stored is now referred to as the Former Spent Potliner Storage Area. From 1958 until 1979, construction material and other miscellaneous plant debris were deposited in an approximately 4 acre area in the southeastern corner of the site. This area, known as the Construction Material Scrap Dump, was subsequently leveled and covered with dirt. The Carbon Runoff and Deposition Area is a densely vegetated, low-lying area that contains carbon deposits, believed to have been carried by storm water runoff from the vicinity of the anode crushing system. The Carbon Runoff and Deposition Area and Construction Material Scrap Dump are separated by a narrow strip of land adjacent to the 004 Outfall stream. Sediments from these, and possibly other areas, have accumulated in a shallow embayment of the Ohio River referred to as the Backwater Area. The approximate locations of these units are depicted in Figure 2.

4.0 SITE ACTIVITIES

The pre-design investigation activities will have a limited duration and scope. Site activities will consist of the following:

- Collection of soil samples within the Former Spent Potliner Storage Area, and areas between the Construction Material Scrap Dump and 004 Outfall stream.
- Collection of surface water samples from seeps emanating from the Construction Material Scrap Dump
- Collection of sediment samples from the Backwater Area

A brief description of each sampling activity is provided below:

4.1 Soil Sample Collection

Surficial soil samples will be collected to support two pre-design activities. A total of three soil samples will be collected from the Former Spent Potliner Storage Area in order to permit implementation of a treatability study to evaluate the effect of flushing on inorganic constituent levels. A total of eight soil samples will also be collected from the ground between the western limit of the CMSD and the 004 Outfall stream to assess the presence/absence of polychlorinated biphenyls (PCBs) and, if present, to permit comparison to established Soil Cleanup Standards.

The samples will be collected using manually-operated augers, scoops, and/or trowels, and be placed in containers for transportation to appropriate laboratories. Upon completion of sampling, material that intimately contacts soil from within the area of interest (e.g., sampling equipment, gloves, overboots, etc.) will be decontaminated or containerized for proper disposal.

4.2 Surface Water Sample Collection

Limited surface water sampling will also be performed to support a pre-design treatability study. Water will be collected from up to two seeps flowing from the Construction Material Scrap Dump in order to permit implementation of a treatability study to evaluate the effect of oil removal and carbon adsorption during pre-treatment activities.

The samples will be collected in jars, or appropriate transfer containers. Depending upon the flow rates at the time of sampling, it may be necessary to excavate depressions in the surrounding soil (using manually-operated augers, scoops, or similar equipment) in order to collect representative seep samples. Upon completion of sampling, material that intimately contacts soil from within the area of interest (e.g., sampling equipment, gloves, overboots, etc.) will be decontaminated or containerized for proper disposal.

4.3 Sediment Sample Collection

Limited sediment sampling will also be performed to support the pre-design activities. A total of four sediment samples will be collected from within the Backwater Area to assess the presence/absence of PCBs and polynuclear aromatic hydrocarbons (PAHs) and, if present, to permit comparison to established Soil Cleanup Standards.

The samples will be collected using manually-operated core-type sampling devices, and be placed in containers for transportation to appropriate laboratories. It is anticipated that the samples can be safely collected by personnel wading in the shallow water; however, a boat may also be utilized. Upon completion of sampling, material that intimately contacts sediment from within the area of interest (e.g., waders, sampling equipment, gloves, overboots, etc.) will be decontaminated or containerized for proper disposal.

5.0 HAZARD EVALUATION

The types of hazards associated with site activities, may include chemical, mechanical, electrical, physical, and temperature. A description of each is provided below. Anticipated mechanical, electrical, physical, and/or temperature hazards associated with each field activity at the site include the following:

Job Activity	Mechanical	Electrical	Chemical	Physical	Temperature
Soil boring and sampling	None anticipated	Buried power line	accidental absorption, eye contact	Slip, trip, and fall	Heat or Cold Stress
Surface water sampling	None anticipated	None anticipated	accidental ingestion, skin absorption, eye contact	Slip, trip, and fall,	Heat or Cold Stress
Sediment sampling	None anticipated	None anticipated	accidental ingestion, skin absorption, eye contact	Boating, Slip, trip, and fall	Heat or Cold Stress

5.1 CHEMICAL

A significant amount of chemical data was collected during the Remedial Investigation. The Baseline Risk Assessment performed as part of that program concluded that the only excessive life-time health risk associated with constituent exposure under current site use conditions was hypothetical trespasser ingestion and dermal exposure to PCBs and PAHs in the Backwater Area sediment over an extended period of time (i.e., decades). The Baseline Risk Assessment also postulated excessive life-time health risk associated with hypothetical future residential land use relating to ingestion, dermal exposure and/or inhalation of inorganic constituents (Arsenic, beryllium, and Chromium), PCBs, and PAHs in the site soils over an extended period of time (i.e., decades). However, the U.S. EPA subsequently determined that future residential development at the site was not likely.

While the risk is limited, personnel performing environmental sampling will be required to comply with this health and safety plan, which will address the possibility of exposure to a relatively broad suite of constituents that have been detected above the Contract Required Detection Limits in samples of soil, sediment, and seep water during the Remedial Investigation. These constituents include:

- Polynuclear aromatic hydrocarbons (PAHs)
- Polychlorinated biphenyls (PCBs)
- RCRA metals
- Cyanide, as cyanide salts (due to the virtual absence of fresh potliner in the sample areas, the potential for exposure to hydrogen cyanide gas is highly improbable)

Health and safety data regarding these chemicals is presented in Tables 1 and 2.

5.2 PROCEDURES FOR EXTREME WEATHER CONDITIONS

There is a potential for adverse weather conditions depending upon the season and level of personnel protective equipment required when performing environmental sampling tasks. Site workers shall maintain an awareness of potential psychological and physiological affects of such conditions, and take appropriate measures to protect themselves and their co-workers.

5.2.1 Heat Stress Recognition And Control

The wearing of Personal Protective Equipment (PPE) can place a worker at considerable risk of developing heat stress. This can result in health effects ranging from transient heat fatigue to serious illness or death. Heat stress is caused by a number of interacting factors, including environmental conditions, clothing, work load, and the physical characteristics/condition of the worker. Because heat stress is probably one of the most common (and potentially serious) illnesses at hazardous materials sites, regular monitoring and other preventive precautions are vital.

Heat stress monitoring shall commence when personnel are wearing PPE, including Tyvek®-type coveralls, and the ambient temperature exceeds 70°F. If standard work garments (cotton coveralls) are worn, monitoring shall commence at 85°F. For workers wearing standard work clothes, recommendations for monitoring and work/rest schedules are those approved by ACGIH and NIOSH. To monitor the worker, the heart rate should be measured; the radial pulse should be counted during a 30-second period as early as possible in a rest period. If the heart rate exceeds 110 beats per minute at the beginning of

the rest period, the next work cycle should be shortened by one third and the rest period should be kept the same.

5.2.2 Cold Stress Recognition And Control

Protection against cold stress should be initiated when temperatures drop below 45°F. Exposure to cold working conditions can result in cold stress (hypothermia) and/or injury (frostbite) to hands, feet, and head. Hypothermia can result when the core body temperature drops below 36°C (96.8°F). Lower body temperature will very likely result in dizziness, drowsiness, disorientation, slurred speech, or loss of consciousness, with possible fatal consequences. Pain in the extremities may be the first warning of danger to cold stress. Shivering develops when the body temperature has fallen to 35°C (95°)F.

Hypothermia can be brought on by exposure to cold air, immersion in cold water, or a combination of both. Wind chill factor, the cooling power of moving air, is a critical factor in cold stress.

Adequate insulating clothing must be worn by workers if work is performed in temperatures below 4°C (40°F). At temperatures of 2°C(35.6°F) or less, workers whose clothing becomes wet should be immediately provided with a change of clothing, and if necessary, treated for hypothermia. Treatment includes warming the victim with skin-to-skin contact, or by providing warm blankets or other coverings, and drinking warm liquids. Skin exposure should not be permitted at temperatures of -32°C (-25°F) or below.

If fine work is to be performed with bare hands for more than 10-20 minutes at temperatures below 16°C (60°F), provisions should be made for keeping the workers' hands warm. If equivalent chill temperatures fall below 40°F and fine manual dexterity is not required, then gloves should be worn. Metal handles of tools should be covered with insulating material at air temperatures below -1°C (30°F).

If work is to be performed continuously in the cold when the wind chill factor is at or below -7°C (19°F), heated warming shelters (tents, trailers, vehicle cabs) should be made available nearby.

5.3 PHYSICAL HAZARDS

The implementation of environmental sampling tasks involves a number of potential physical hazards more commonly associated with construction activities, such as noise, slips/trips/and falls, lifting etc. Site workers shall maintain an awareness of potential physical hazards associated with the anticipated site activities, and take appropriate measures to protect themselves and their co-workers.

5.3.1 Noise Hazards

If hazardous noise levels are created by the equipment or other sources at the site, personnel will utilize proper ear protection (e.g., ear plugs). All Dames & Moore site personnel are in the firm's Hearing Conservation Program and have had baseline and, where appropriate, annual audiograms. Personnel will wash their hands with soap and water prior to inserting ear plugs to avoid initiating ear infections.

5.3.2 Slip/Trip/Fall Hazards

Workers should exercise caution when walking around the site to avoid fall and trip hazards. If holes or uneven terrain are located in the work area which could cause site personnel to fall or trip, they must be covered, flagged or marked to warn workers. If conditions become slippery, workers should take small steps with their feet pointed slightly outward to decrease the probability of slipping. Workers should watch where they are walking and plan the route to walk in areas of good stability.

5.3.3 Lifting Hazards

Accidents in manual handling of materials are primarily the result of unsafe working habits-improper lifting, carrying too heavy a load, incorrect gripping, or failing to wear personal protective equipment. These may be avoided by testing the weight of an object before attempting to lift and carry it, and utilize proper lifting techniques.

5.3.4 Boating/Wading Hazards

The implementation of sampling activities in or on water increases the potential for slips/trips/and falls, and also creates the potential for drowning. All personnel performing,

or supporting sampling efforts, within the Backwater Area shall wear a personal flotation device. Flotation devices of Types I, II, III, IV, and V can be used. Types I and V are designed to save an unconscious person from drowning because they will turn an unconscious person from a face-down position in the water. The Type I device provides maximum flotation and thus maximum protection in rough water. For the Backwater Area sampling activities, a Type I or Type II personal flotation device shall be worn. Sampling personnel shall wear water-proof waders in order to minimize the potential for dermal contact with sediments disturbed by sampling and wading activities. The waders shall be worn in a manner that they can be readily removed if they become filled with water.

In the unlikely event that water-craft will be needed for collection of Backwater Area sediment samples, additional health and safety controls shall be required. The following general operating requirements pertain to boating operations, regardless of size or extent:

- The boat operator is responsible for the safety of all persons and equipment on board, and shall provide a safety briefing for all occupants of the boat prior to leaving the dock, pad, etc. Boat operators must complete emergency first-aid training.
- Boats are not to be boarded by unauthorized or non-essential persons (e.g., family, dependents, or friends).
- For extensive boating operations, the employee in charge should have taken the U.S. Coast Guard Boating Skills and Seamanship course or its equivalent.
- Personal gear should include shoes or boots with anti-skid soles and footwear suitable for sampling or other work done outside the boat. Water repellent clothing and sufficient warm clothing should be taken along on the boat. A change of dry clothing is often needed.
- Boat operators shall initiate operations on the ocean, estuaries, large lakes, and large rivers only after acquiring a current and reliable weather forecast. Common sense must prevail. When in doubt, the safer course of action is required.
- Auxiliary fuel should be stored in safety cans and secured to prevent spillage, away from sources of heat and sparks.
- Boats must be equipped with non-slip floorboards.
- Excess equipment is to be minimized and that which remains on board should be stowed in such a way that walkways are kept clear and fire hazards are avoided.

Required Equipment

- Every motorboat shall have a fire extinguisher approved for fighting electrical fires or burning liquids, e.g., gasoline. (A 2.5-pound dry chemical extinguisher will satisfy the requirement, but a 6-pound dry chemical extinguisher will offer a greater chance of putting out a liquid fuel fire.) The fire extinguisher should be located convenient to the fueling area to put out spill fires.

- All boats operated in estuaries or open seas should be equipped with two-way radios adequate to communicate with at least one shore station. Boats with marine radios will monitor a distress frequency when not transmitting.

- Boats from 16 to 26 feet long must carry an audible signal, such as a whistle or horn, that can be heard for at least a half mile. A police whistle will meet this requirement.

- Boats with enclosed spaces where spilled fuel or fuel vapors can accumulate must have powered ventilation to clear away the fuel vapors. This requirement does not normally apply to open boats.

- All passengers must wear life jackets, although divers are permitted to wear wet suits in lieu of life jackets. Boats must also carry at least one towable flotation device.

- Flotation devices Types I, II, III, IV, and V can be used. Types I and V are designed to save an unconscious person from drowning because they will turn an unconscious person from a face-down position in the water. The Type I device provides maximum flotation and thus maximum protection in rough water. The Type V device is designed for work activities. Float coats or exposure suits approved by the Coast Guard are recommended for cold water operation. Wet suits can also be used, preferably with an additional flotation device.

5.4 ELECTRICAL HAZARDS

Safe work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts. Overhead power lines, downed electrical wires, buried cables, and equipment cords all pose a danger of shock or electrocution if workers contact or sever them during field operations.

5.4.1 Electrical Equipment

Any electrical equipment used by the contractor during work activities may pose a hazard. To minimize electrical hazards, low-voltage (below 250 volts A.C.) equipment with ground-fault interrupters (GFI) and water-tight, corrosion resistant cables should be

used. GFI should be used on all circuits carrying electrical power from an indoor source or a portable generator equipment or lighting. Worn switches and wiring should be quickly repaired and use of water should be controlled. Equipment should also be properly grounded as protection against shock, static, electricity, and lightning.

Lockout procedures should be implemented whenever there is the possibility of a hazard due to unexpected energization during repair or maintenance of equipment.

5.4.2 Underground Utilities

The Site Safety Officer is responsible to see that underground utility locations are identified prior to the commencement of any subsurface (> 1-foot) activities. It will be necessary to communicate the importance of verifying underground utility lines to the sub-contractor prior to digging. Utility protection/locating services will be contacted prior to drilling at the site. Dames & Moore may review diagrams supplied by the client regarding the location of utilities. The deactivation of utilities should be certified by the proper utility company personnel, and the certification retained in the permanent log.

5.5 BIOLOGICAL/ENVIRONMENTAL HAZARDS

In addition to known potential site hazards, such as poison ivy, site personnel should survey the area for other hazards such as biological hazards (i.e., raw sewage/cesspools, sanitary landfills, hospital wastes, and dead animals). A quick survey should also be performed for additional environmental hazards (i.e., bees, wasps, snakes, dogs, poison oak, etc.). If any additional hazards are identified during the survey, the appropriate precautions will be taken in the field to ensure contact is not made with these hazards.

6.0 EMPLOYEE PROTECTION

Employee protection for this project includes standard safe work practices, PPE, procedures and equipment for extreme weather conditions, work limitations, and exposure evaluation.

6.1 STANDARD SAFE WORK PRACTICES

Standard safe work practices that will be followed include:

- All field activities will be performed utilizing the "Buddy System". As such, each team member will be paired with another team member. During field activities, each team member will be responsible for observing their partner for signs of chemical or heat exposure. Each member will also be responsible for checking the integrity of their partner's PPE. At all times, each team member will be in line-of-sight contact and communications contact with their partner.
- No digging will take place without first confirming the absence of subsurface utility lines or other buried debris.
- Eating, drinking, chewing tobacco, smoking, and carrying matches or lighters are prohibited in potentially contaminated areas or whenever the possibility for the transfer of contamination exists.
- Avoid contact with potentially contaminated substances. Do not walk through puddles, pools, mud, etc. Whenever possible, avoid kneeling on the ground, leaning, or sitting on equipment on the ground. Do not place monitoring equipment on potentially contaminated surface (i.e., ground, etc.).
- All field members will make use of their senses (all senses) to alert them to potentially dangerous situations in which they should not become involved (i.e., presence of strong and irritating or nauseating odors).
- Prevent splashing of potentially contaminated materials.
- Practice good personal hygiene; hands should be washed before eating and when leaving site.
- Field crew members will be familiar with the physical characteristics of investigations, including the following:
  - accessibility to co-workers, equipment, and vehicles
  - communication
  - areas of known or suspected contamination
  - site access
  - nearest water sources

6.2 PERSONAL PROTECTIVE EQUIPMENT

Field activities will be initiated in Level D+ PPE as indicated in Table 3. The following is a brief description of the U.S. EPA designated levels of personal protection

that may be implemented for this project. Respiratory protective equipment, if needed, will be NIOSH-approved and will conform to 29 CFR 1910.134.

Level D+

Level D+ protection will be used when:

- The atmosphere contains no known hazard
- Work functions preclude splashes, immersion or the potential for unexpected inhalation of, or contact with, hazardous levels of any chemicals

Level D+ will consist of (minimum):

- Long-sleeve shirt and pants
- Tyvek-type Coveralls
- Safety-toe workboots
- Chemical resistant overboots or covers, or substitute chemical resistant steel-toe boots
- Gloves, if needed
- Safety glasses or splash shield as needed
- Hard hat
- Personal flotation device (wading/boating only)

If field conditions indicate a higher level of contamination than anticipated, sampling activities will be halted and a reassessment of the field program will be conducted. The reassessment will include the type of PPE recommended for field activities. If higher levels are necessary, they will be selected based on the contaminants and concentrations. Any adjustments in field procedures as a result of a reassessment will result in an amendment of this health and safety plan .

6.3 WORK LIMITATIONS

All personnel scheduled for these activities will have completed initial health and safety training and actual field training as specified in 29 CFR 1910.120(e), and have completed CPR and first-aid training. Documentation of field personnel's health and safety training is to be maintained by the employees' office of origin.

6.4 EXPOSURE EVALUATION

An exposure history form will be completed for each worker participating in site activities. The employee exposure history form (Appendix A) includes onsite monitoring results and laboratory analyses of any samples collected. A copy of the exposure history form is to be maintained in each site worker's possession, possibly with his field notes or travel equipment.

7.0 MEDICAL MONITORING REQUIREMENTS

All project personnel who plan to conduct work in hazardous areas will be included in the medical surveillance program. Access to hazardous site areas will not be permitted without appropriate medical clearance. The decision of who will be included in the medical monitoring program is the responsibility of each Dames & Moore office where medical monitoring is required for site activities.

8.0 MONITORING REQUIREMENTS

Due to the non-volatile nature of the potential air contaminants on-site and the fact that all site activities will be conducted outdoors, personnel monitoring will consists of visual observation for dusting conditions. Air monitoring instruments will not be required.

Visual Observation - Visual observation will be conducted continuously to monitor for airborne dust which may be contaminated with heavy metals and cyanide salts. Should dusty conditions occur, dust suppression methods (i.e. wetting) will be employed. If dust suppression methods are inadequate to control dust, construction activities will be halted and the project manager notified. Sampling shall not be resumed until the dusty conditions cease, or this health and safety plan is amended to require alternate field procedures.

9.0 SITE CONTROL MEASURES

To control employee exposure to hazardous substances and situations, site control measures will be followed. Appropriate site work zones will be established at each site in order to reduce the migration of contaminants into clean areas, and/or prevent access or exposure to hazardous materials and situations by unauthorized personnel. These zones will be established and exist in various degrees depending on the site activities, hazard

evaluation, and site characterization. **It is the responsibility of the Site Safety Officer to establish these zones prior to any site activities.** Definitions for each work zone are outlined below.

9.1 SITE WORK ZONES

In order to establish the hazardous area perimeter, reduce migration of contaminants into clean areas, and to prevent access or exposure to hazardous materials by unauthorized persons, work zones will be established at the site. These zones typically consist of exclusion zones, contamination reduction zones, and support zones.

Due to the limited scope and duration of the field activities, pre-delineation of formal work zones is not required. Instead, temporary exclusion, contamination reduction, and support zones will be established by the sampling team, as appropriate, in the immediate vicinity of the sampling locations.

9.1.1 Exclusion Zone

A temporary exclusion zone, the area where contamination does or could occur, will be established around the immediate area where the soil, water, or sediment sampling activities will be conducted. Personnel conducting activities in the Exclusion Zone will be required to wear Level D+ PPE.

Due to the limited intrusiveness of the sampling activities and non-volatile nature of the constituents of interest, the exclusion zone shall be limited to the immediate area of the sample collection activities. Sampling personnel shall personally control access to the area, and assure that sampling activities do not create excessive dust that could lead to personnel exposure at, or downgradient of, sampling activities.

9.1.2 Contamination Reduction Zone

Contamination Reduction Zone is the transition area between the contaminated area and the clean area. Due to the nature of the site (large site with low concentrations of widely dispersed constituents), contamination reduction zones shall be established in suitable working areas in general proximity to the various sampling areas. The removal of contaminated PPE and the decontamination of personnel and equipment will take place at

discrete areas designated by sampling personnel. Personnel decontamination need not be performed between the various sampling locations, unless overboots and/or outer garments are visibly contaminated by sampling media (soil, sediment, or water). Sampling personnel shall not enter any vehicle prior to removal of visibly stained overboots and/or outer garments.

The general procedures for personnel and equipment decontamination are discussed in Section 10.0.

9.1.3 Support Zone

The Support Zone is the area of the site where administrative and other support functions needed to keep the site activities running smoothly are performed. Personnel entering this zone do not have to comply with the training and medical requirements specified in 29 CFR 1910.120. Personnel may wear normal work clothes within this zone.

Support Zone personnel are responsible for alerting the proper agency in the event of an emergency. A vehicle will be utilized as the field office for the site, and will constitute the primary feature of the Support Zone. A copy of the Health and Safety Plan, all emergency phone numbers, evacuation route maps, and maps showing route to the nearest hospital (see Figure 3) will be kept within the vehicle except when in use. Prior to implementation of the field activities, the hospital will be notified of the upcoming field activities. Equipment and supplies for field activities, decontamination, and health and safety requirements will also be kept in the vehicle, or stored in an off-site area designated by Ormet Primary.

9.2 COMMUNICATION SYSTEMS

Personnel in the Exclusion Zone should remain in constant radio communication or within sight of the Site Safety Officer. Any failure of radio communication requires an evaluation of whether personnel should leave the Exclusion Zone.

A horn blast is the emergency signal to indicate that all personnel should leave the Exclusion Zone.

The following standard hand signals will be used in case of failure of radio communications:

Hand gripping throat	Out of air, can't breath
Grip partner's wrist or both hands around waist	Leave area immediately
Hands on top of head	Need assistance
Thumbs up	OK, I am all right, I understand
Thumbs down	No, negative

9.3 SITE SECURITY

Procedures that will be implemented to maintain site security during off-duty hours will include:

- Assign trained, in-house technicians or security guards for site surveillance. They will be familiar with the site, the nature of the work, the site's hazards, and respiratory protection techniques.
- Secure equipment.

10.0 DECONTAMINATION

Separate decontamination areas will be established for personnel and equipment decontamination in the Contamination Reduction Corridor within the Contamination Reduction Zone. The decontamination procedures, outlined below, will be communicated to onsite workers before they enter the Exclusion Zone. All personnel and equipment leaving the Exclusion Zone will be appropriately decontaminated before being allowed to exit the decontamination area. No unauthorized personnel shall remove any protective clothing or equipment from a decontaminated area. Any changes in these decontamination procedures must be pre-approved by the site safety officer and a written amendment justifying the changes attached to this plan.

10.1 PERSONNEL DECONTAMINATION

The decontamination procedures will consist of brushing heavily soiled overboots, rinsing gloves and overboots with soap and water, and allowing them to dry, if disposable boot covers and gloves are not worn. Decontamination procedures will be conducted at the end of each work day. If the field activities zone is left at other times during the work day, boots and gloves will be left at the site and will be reworn upon returning.

Presented below is a list of recommended equipment for decontamination of personnel and personal protective clothing and equipment:

- Drop cloths of plastic or other suitable materials on which heavily contaminated equipment and outer protective clothing may be deposited
- Collection containers, such as drums or suitable lined trash cans, for storing disposable clothing and heavily contaminated personal protective clothing or equipment that must be discarded
- Large galvanized tubs, stock tanks, or children's wading pools to hold wash and rinse solutions. These should be at least large enough for a worker to place a booted foot in, and should have either a drain connected to a collection tank or appropriate treatment system
- Long-handled, soft-bristled brushes to help wash and rinse off contaminants
- Paper or cloth towels for drying protective clothing and equipment
- Metal or plastic cans or drums for contaminated wash and rinse solutions
- Plastic sheeting, sealed pads with drains, or other appropriate methods for containing and collecting contaminated wash and rinse solutions spilled during decontamination
- Soap or wash solution, wash cloths, and towels for personnel

10.2 CLOSURE OF THE PERSONNEL DECONTAMINATION STATION

All disposable clothing and plastic sheeting used during site activities will be placed in garbage bags and disposed of properly. Decontamination and rinse solutions will be collected and placed in a sump designated by Ormet Primary and disposed of accordingly. Reusable clothing will be dried and prepared for future use. If gross contamination has occurred, additional decontamination of these items may be required. All washtubs, pails, etc. will be washed, rinsed, and dried prior to removal from the site.

10.3 EQUIPMENT DECONTAMINATION

All sampling equipment will be decontaminated prior to sampling using the following procedures:

- Clean equipment using a brush to remove particulate matter
- Clean equipment with tap water and a laboratory, phosphate-free detergent and scrub brush
- Rinse with tap water
- Rinse with distilled water
- Air dry
- Wrap small pieces of equipment in aluminum foil for transportation or storage

All water (soapy, tap, distilled, etc.) and other byproducts of the equipment decontamination will be contained and disposed of properly.

11.0 CONFINED SPACES

It is not anticipated that any confined spaces will be encountered at this site for the activities covered under this safety plan. However, if a confined space is identified, an amendment will be written to this plan to address proper confined space entry procedures before the activity commences.

12.0 SPILL CONTAINMENT PROGRAM

Spill containment measures are not expected to be a concern at the site. However, if any drum or container handling operations are to be conducted at this site, they will be conducted in accordance with 29 CFR 1910.120 (j). These wastes will be placed in approved DOT drums and managed in accordance with applicable DOT and RCRA regulations.

12.1 SPILL OR HAZARDOUS MATERIALS RELEASE

Small spills are immediately reported to the Site Safety Officer and are dealt with according to the chemical manufacturers' recommended procedures found on the Material

Safety Data Sheet (MSDS). Steps will be taken to contain and/or collect small spills for approved storage and disposal.

In the unlikely event of a larger release of hazardous materials as a result of site activities, site personnel will evacuate to the predesignated assembly area. The local Designated Emergency Response Authority (DERA) will be notified by the Ormet Primary Project Coordinator immediately and appropriate actions will be taken to protect the public health and mitigate the contaminant release. The DERA can be reached through the plant security department. Emergency contacts will be made by the Site Safety Officer through the Ormet Primary Project Coordinator. The Site Safety Officer will also contact the Division Health and Safety Manager and the Project Manager, as soon as time permits. Contact numbers are listed on the cover of this plan.

12.2 SAMPLE SHIPMENT/HAZARDOUS MATERIALS SHIPMENT

If the samples to be collected during the course of this project fall under the criteria that defines them as hazardous materials under DOT regulations 49 CFR Parts 171-177, then they must be shipped in accordance with those regulations by an individual who is certified as having been Function-Specific trained as required under the DOT regulations. However, it is not anticipated that any soil or water samples will be hazardous according to DOT regulations.

13.0 AUTHORIZED PERSONNEL

The Field Manager will direct onsite investigations and operational efforts. The Field Manager will also serve as Site Safety Officer. In this role, he has primary responsibility for:

- Assuring that a copy of the health and safety plan is maintained onsite during all field activities
- Assuring that appropriate PPE and monitoring equipment are available and properly utilized by all onsite personnel
- Assuring that personnel are aware of the provisions of this plan, are instructed in the work practices necessary to ensure safety, and are familiar with planned procedures for dealing with emergencies
- Assuring all field personnel have had a minimum of 40 hours training and have been fit-tested for the appropriate respirators

- Being aware of the provisions of the plan, instructed in the work practice necessary to ensure safety, and in planned procedures for dealing with emergencies
- Being aware of the potential hazards associated with site operations
- Correcting any work practices or conditions that may result in injury or exposure to hazardous substances
- Preparing any accident/incident reports, in the event of an accident (Appendix A)

14.0 EMERGENCY RESPONSE PLAN

If any situation or unplanned occurrence requires outside or support services, the Ormet Primary Project Coordinator will be informed and the appropriate contact will be made. The contacts and emergency telephone numbers are listed on the cover page.

14.1 SITE RESOURCES

The site vehicle will be used as field office for the site. Equipment and supplies for field activities, decontamination, and health and safety requirements will be stored here. The health and safety plan will be maintained here at all times. One Type C fire extinguisher will be onsite. Portable eye wash facilities and first-aid kits will also be available. The portable eyewash equipment will be Bend-All-Eyesaline™, Econ Firstep™, or equivalent, and will conform with ANSI Z-358.1. First-aid kits equivalent to those provided by the American Red cross will be acceptable. At a minimum, these kits will include adhesive tape, cold pack, band-aids, gauze pads, antiseptic ointment, etc. All site personnel have been trained in first aid and CPR. The site worker is responsible for maintaining and bringing his or her certification records with them on site.

14.2 EMERGENCY PROCEDURES

It will be important to recognize and plan for any unexpected emergency that may develop onsite. Planning and procedures outlined below are to be followed.

14.2.1 Emergency Planning

Emergency planning will be discussed during the site safety briefings prior to the start of work each day. The Site Safety form must be filled out daily and the names of personnel that will be onsite that day must be entered (Appendix A). In the discussion of the work for the day, considerations will be given to any possibilities of emergency situations that could develop as a result of the day's field activities. All field personnel, including the sub-contractor, will need to know the location of emergency supplies and first aid equipment. All site personnel must also be aware of any special concerns specific for the site that might cause injury, illness, or create an emergency situation. Site work area entrance and exit routes will be planned and emergency escape routes delineated by the Site Safety Officer, if he/she feels it is necessary. All site personnel should know the location of the hospital and have access to emergency phone numbers in the event of a crisis or emergency situation. All field personnel will have access to this plan.

14.2.2 Emergency Conditions

Emergency condition are considered to exist if:

- Any member of the field crew is involved in an accident or experiences any adverse effects or symptoms of exposure while on the scene
- A condition is discovered that suggests the existence of a situation more hazardous than anticipated

The following emergency procedures will be followed:

- In the event that a member of the field crew experiences any adverse effects or symptoms of exposure while on the scene, the entire field crew will immediately halt work and act according to the instructions provided by the Site Safety Officer.
- The discovery of any condition that would suggest the existence of a situation more hazardous than anticipated will result in the suspension of work until the office safety coordinator has been notified and appropriate instructions have been provided to the field team.
- In the event that an accident occurs, the project manager is to complete an Accident Report Form (found in Appendix A) for submittal to the managing associate of the office. A copy will be forwarded to the firmwide and regional health and safety program offices.

14.3 EVACUATION ROUTES

In the event of an emergency, evacuation routes will be established by the Site Safety Officer. For extreme emergencies, evacuation should be conducted immediately without regard for equipment. The following guidelines shall be followed for an emergency evacuation:

- Notification will be three short blasts on an air horn, vehicle horn, or by verbal communication.
- Stay upwind of smoke, vapors, or spill.
- Supervisors will conduct a head count to ensure all personnel have been evacuated.
- If necessary, site personnel will secure the area.
- Workers shall not re-enter the evacuated area until notified that it is safe.

The Site Safety Officer is responsible for reporting incidents to the Ormet Primary Project Coordinator and/or plant security immediately. The Ormet Primary Project Coordinator shall be responsible for reporting incidents to the appropriate local, state, and federal agencies. The site Safety Officer shall also report such incidents to its management, as soon as possible.

14.4 BLOODBORNE PATHOGENS

For purposes of this health and safety plan, the field activities planned at this site fall into the category of classification B in Dames & Moore's Bloodborne Pathogens Program. These are jobs where required tasks normally do not, but could involve exposure to blood, bodily fluids, or tissues (for example), in the event first aid or CPR is required. If exposure to blood, bodily fluids, or tissues occurs, universal precautions using the appropriate PPE and sanitary procedures will minimize the chance of contracting disease.

14.4.1 Universal Precautions

In the event that exposure to blood, bodily fluids, or tissues occurs, affected personnel should implement the following measures:

- Wash hands with soap and water as soon as possible after accidental contact with blood, bodily fluids, or human tissue from an injured worker. When washing facilities are not readily available, antiseptic hand cleansers shall be used.

- Wear gloves when anticipating contact with blood, bodily fluid, tissues, mucous membranes, or contaminated surfaces, or if breaks in the skin are present.

- Wear appropriate protective equipment at all times, including a mask and eye protection, if aerosolization or splattering is likely to occur when attending to an injured worker or when conducting normal work routines.

- Insure that mouthpieces and appropriate personal protective equipment are readily available in first aid kits.

- Report immediately to the Site Safety Officer all cuts, mucosal splashes, or contamination of open wounds with blood or bodily fluids.

- Dispose of all spills which contain or may contain biological contaminants in accordance with policies for hazardous waste disposal. Until cleanup is complete, an accident area should be roped off from other workers.

The following work practice controls shall also be used to eliminate or minimize employee exposure. Where occupational exposure remains after instituting these controls, personal protective equipment shall also be used.

- Ingestion of bloodborne pathogens- Eating, drinking, smoking, applying cosmetics, and handling contact lenses are prohibited in work areas where there is a reasonable likelihood of occupational exposure. Food and drink shall not be kept in refrigerators, freezers, shelves, cabinets, or on countertops of bench tops where blood or other potentially infectious materials are present.

- If handling potentially infectious bodily parts following dismemberment in an accident, specimens of blood or other potentially infectious materials shall be placed in a container which prevents leakage during collection, handling, processing, storage, transport, or shipping. The container shall be labeled or color coded according to labeling requirements and closed prior to storage, transportation, or shipping. If outside contamination of the primary container occurs, the primary container shall be placed within a secondary container that is puncture-resistant and prevents leakage.

- Equipment (such as drill rigs or equipment used in first aid response) which may become contaminated with blood or other potentially infectious materials shall be examined prior to servicing or shipping and decontaminated as necessary, unless the site supervisor determines that decontamination of such equipment is not feasible. A readily observable biohazard label shall be attached to the equipment stating which portions remain contaminated. The site supervisor shall insure that this information is conveyed to all affected employees, the servicing representative and/or manufacturer as appropriate,

prior to handling, servicing or shipping so that appropriate precautions may be taken.

- Personal protective equipment-appropriate personal protective equipment will be provided, such as gloves and mouthpieces in the first aid kit.
- All emergency first aid kits will contain red biohazard bags to contain waste created in first aid/emergency situations.
  - Gloves will be worn at all times
  - Containers will not be overfilled
  - Containers will be tightly closed or sealed prior to transportation
  - Pools of blood, bodily fluid, tissue, or spills from biohazard waste containers shall be cleaned up with sodium hypochlorite or Chlorox bleach, 1 part to 10 parts water.

Employees who have had an exposure incident will be referred for a confidential post-exposure evaluation and follow-up. This will be made available within a reasonable time and location, and performed by or under the supervision of a licensed physician or licensed healthcare professional.

When an exposure incident is reported, the Project Manger will complete the Bloodborne Pathogens Incident Evaluation Form (copy found in Appendix A) and will immediately refer the employee for a confidential medical evaluation and follow-up. This referral must be made within 24 hours.

14.4.2 Decontamination of Equipment

The following procedures shall be used for equipment decontamination:

- Clean spills from around equipment immediately.
- Employees engaged in cleaning equipment shall use personal protective equipment that will insure that there is no contact of potentially contaminated material with skin or personal clothing.
- Clean large equipment with a germicidal detergent or bleach (1 part to 10 parts water), avoiding splatter or dripping. If dripping is reasonably anticipated, use a drop cloth under the equipment being cleaned.

- Wipe contamination from small, reusable equipment. Label the equipment with warning labels indicating which parts are contaminated before sending it to an appropriate location for reprocessing.
- All cleaning materials and personal protective equipment shall be disposed of as infectious waste or properly prepared for transport to a laundry as potentially infectious laundry.
- Wash hands after removal of personal protective equipment.

15.0 HAZARD COMMUNICATION

Field personnel shall be covered by a Hazard Communication Program that complies with the OSHA Hazard Communication Standard found in 20 CFR 1910.1200 and 20 CFR 1926.59, which applies to any chemical present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency. Although waste materials are excluded form the OSHA requirement, decontamination chemicals for sampling apparatus or protective clothing (such as acetone, isopropanol, hexane, Alconox, or trisodium phosphate); calibration gases for monitoring equipment (such as isobutylene gas); and sample preservation chemicals (such as nitric acid, sulfuric acid, or hydrogen chloride solutions) require MSDSs.

The principle of communicating the hazards of materials used in the workplace to employees applies broadly to firmwide activities, from informational programs on the conduct of hazardous waste activities to the firm's insistence upon adequate safety and health training. It is also important for personnel to have an awareness of Ormet Primary's concern for Hazard Communication due to Federal, state, and local regulations directly affecting site activities.

In order to comply with Hazard Communication Standard (29 CFR 1910.1200), Dames & Moore has determined that:

- All containers of hazardous chemicals must be appropriately labeled or tagged to identify the hazard and provide information on effects and appropriate protective measures.
- Labels, tags, or signs must be properly affixed and visible at all times while a hazard is present and removed promptly when the hazard no longer exists.
- Written information (MSDSs) on hazardous chemicals in the workplace must be available to employees working with the substance.

- Appropriate MSDSs will be available to any contractor or subcontractor employees working in Dames & Moore offices or laboratories or at construction, excavation, or other sites under Dames & Moore's control.
- Hazard Communication Training is provided to Dames & Moore employees.

Any MSDS required for this project shall be attached to this health and safety plan, prior to delivery of the potentially hazardous material to the site.

16.0 FORMS

The following forms will be used in implementing this health and safety plan and will be completed as follows:

- Site Safety Briefing form will be completed on a daily basis by the safety officer.
- The Plan Acceptance form will be completed by all employees working at the site prior to commencement of site activities.
- The Plan Feedback form will be completed by the onsite safety officer and any other onsite employee who wishes to fill one out.
- The Accident Report form will be completed by the project manager in the event that an accident occurs.
- Subcontractor's Statement of Compliance will be completed by the subcontractor before any field activities begin.
- The Employee Exposure History form will be completed by both the project manager and the individual(s) for which the form is intended.
- The Bloodborne Pathogen form will be completed if there is an incident of exposure to blood or other body fluids, contacted either through emergency rescue services or from waste contaminants in the field
- Emergency Response Checklist is used to remember emergency procedures.

TABLE 1

EXPOSURE LIMITS AND RECOGNITION QUALITIES

Compound	Exposure Limits		IDLH	Exposure Warning Properties	LEL	Photoionization Meter Information	
	8-Hr. TWA	STEL*		Odor/Irritant	(Percent)	Ionization Potential (eV)	Lamp (eV)
Aroclor 1242	1.0 mg/m3	N/A	Carcinogen	No/Yes	N/A	N/A	N/A
Aroclor 1248	1.0 mg/m3	N/A	Carcinogen	No/Yes	N/A	N/A	N/A
Aroclor 1254	0.5 mg/m3	N/A	Carcinogen	No/Yes	N/A	N/A	N/A
Aroclor 1260	0.5 mg/m3	N/A	Carcinogen	No/Yes	N/A	N/A	N/A
Arsenic	.01 mg/m3	N/A	carcinogen	No/No	N/A	N/A	N/A
Barium	0.5 mg/m3	N/A	250 mg/m3	No/Yes	N/A	N/A	N/A
Cadmium	0.2 mg/m3		Carcinogen	No/yes	N/A	N/A	N/A
Chromium	1 mg/m3	N/A	500 mg/m3	No/No	0.23	N/A	N/A
Lead	.05 mg/m3	N/A	None specified	No/No	Incombustible	N/A	N/A
Mercury	0.05 mg/m3	N/A	28 mg/m3	No/Yes	Noncombustible	N/A	N/A
Selenium	0.2 mg/m3		100 mg/m3	No/Yes	Nonflam-mable	N/A	N/A
Silver	0.01 mg/m3		N/A	No/Yes	Incombust-ible	N/A	N/A
Acenaphthene	None	N/A	None specified	No/No	N/A	-	-

TABLE 1 (Continued)

Compound	Exposure Limits 8-Hr. TWA	Exposure Limits STEL*	IDLH	Exposure Warning Properties Odor/Irritant	LEL (Percent)	Photoionization Meter Information Ionization Potential (eV)	Photoionization Meter Information Lamp (eV)
Acenaphthylene	None	N/A	None specified	No/No	N/A	-	-
Anthracene	0.2 mg/m3	N/A	None specified	Yes/No	N/A	N/A	N/A
Benzo (a) pyrene	0.2 mg/m3	N/A	Suspect Carcin.	No/Yes	Incombustible	N/A	N/A
Bis (2-ethylhexyl) phthalate	5 mg/m3		N/A	No/Yes	0.28		10.2
Chrysene	0.2 mg/m3		None specified	No/Yes	Incombust-	7.75	9.5
Cyanide	5 mg/m3			Yes/Yes	NA	NA	NA
Naphthalene	10 ppm		500 ppm	Yes/Yes	0.9	8.14	10.2
Phenanthrene	0.2 mg/m3		None specified	Yes/No	Combustible	7.8	10.2

Notes:
Source- Occupational Health Service, HAZARDLINE, 1988 and Hazardous Substance Data Bank, National Library of Medicine, 1991.
29 CFR 1910.1,000
CA - Potential Human Carcinogen
NA - Not available.
*STEL - Short-Term Exposure Limit.

TABLE 2

SYMPTOMS OF OVEREXPOSURE, POTENTIAL CHRONIC EFFECTS, AND FIRST-AID TREATMENT

Chemical (Compound)	Routes of Entry	Eye Irritant	Acute Symptoms	Chronic Effects
Aroclor 1242	Inhalation, ingestion, skin or eye contact	Yes	Skin irritation, eye irritatation, mucous membrane irritation, headache, nausea, vomiting, abdominal cramps, fatigue, jaundice, extra pigmentation, diarrhea, blurred vision	Anorexia, central nervous system depression, liver tumors, coma, lung injury, stomach hemorrhage, pancreas injury, kidney injury
Aroclor 1248	Inhalation, ingestion, skin or eye contact	Yes	Skin irritation, eye irritation, mucous membrane irritation, headache, nausea, vomiting, seaabdominal cramps, fatigue, jaundice, extra pigmentation, diarrhea, blurred vision	Anorexia, central nervous system depression, liver tumors, coma, lung injury, stomach hemorrhage, pancreas injury, kidney injury
Aroclor 1254	Skin or eye contact, ingestion, inhalation	Yes	Skin irritation, eye irritation, mucous membrane irritation, headache, nausea, vomiting, abdominal cramps, fatigue, jaundice, extra pigmentation, diarrhea, blurred vision	Anorexia, central nervous system depression, liver tumors, coma, lung injury, stomach hemorrhage, pancreas injury, kidney injury
Aroclor 1260	Inhalation, ingestion, skin or eye contact	Yes	Skin irritation, eye irritation, mucous membrane irritation, headache, nausea, vomiting, abdominal cramps, fatigue, jaundice, extra pigmentation, diarrhea, blurred vision	Anorexia, central nervous system depression, liver tumors, coma, lung injury, stomach hemorrhage, pancreas injury, kidney injury
Arsenic	Inhalation, skin absorption, ingestion	Yes	Skin irritation, eye irritation, mucous membrane irritation, hyperactivity, coughing, frothy sputum, nausea, vomiting, abdominal cramps, diarrhea salivation, weight loss, dermatitis, visual disturbance, bronzing of the skin, brittle fingernails, dizziness, fever, irritability, incoordination, confusion	Paralysis, anesthesia, nasal ulceration, nasal inflammation, pharyngeal inflammation, larynx inflammation, cirrhosis, cardiac failure, skin cancer, lung cancer
Barium	Inhalation, ingestion, skin or eye contact	Yes	Skin irritation, dermatitis, eye irritation, respiratory irritation, muscular spasm, slow pulse, nausea, vomiting, diarrhea, abdominal pain, anxiety, weakness, back pain, dizziness	Hypertension, convulsions, cardiac failure, paralysis, hypothermia

TABLE 2 (Continued)

Chemical (Compound)	Routes of Entry	Eye Irritant	Acute Symptoms	Chronic Effects
Cadmium	Inhalation, ingestion	Yes	Eye irritation, skin irritaton, mucous membrane, irritation, weakness, headache, muscular pain, abdominal cramps, nausea, diarrhea, vomiting, salivation, fever, weight loss, respiratory irritation	Central nervous system depression, respiratory distress, kidney damage, liver damage, shock, hypertension, chronic lung disease
Lead	Ingestion, inhalation, skin absorption, skin or eye contact	No	Insomnia, headache, gingival black line, weight loss, constipation, abdominal pain, wrist drop, metallic taste, vomiting, diarrhea, irritability, fatigue, nervousness, incoordination, foot drop, delirium, dizziness, weakness, visual disturbance, salivation, muscular ache	Sperm count depression, anorexia, malnutrition, hypertension, reproductive effects, collapse, comatose, numbness extremities, cranial nerve paralysis, convulsions, muscular atrophy
Mercury	Inhalation, ingestion, skin or eye contact	Yes	Coughing, dermatitis, salivation, thirst, metallic taste, nausea, vomiting, abdominal pain, diarrhea, bloody stools, gingival blue line, headache, weakness, irritability, insomnia, dizziness, sweating, nervousness, hallucinations, anemia, weight loss, increased tendon reflexes,	Bronchitis, colitis, amnesia, anorexia, convulsions, shock, blindness
Selenium	Inhalation, skin absorption, ingestion, skin or eye contact	Yes	Eye irritation, respiratory irritation, nasal irritation, mucous membrane irritation, skin burns, halitosis, gastrointestinal disturbance, nervousness, nausea, vomiting, diarrhea, headache, dizziness, hypothermia, fever, weakness, pallor, weight loss, bronchitis, metallic taste, abdominal pain, dermatitis, anemia, asthma, hair color change, tooth discoloration	Respiratory edema, liver damage, kidney damage, gastrointestinal damage, hart damage, lung damage
Silver	Inhalation, ingestion skin or eye contact	Yes	Thirst, skin and eye burns, shock, oral pain, mucous membrane pigmentation, black vomitus, diarrhea, shock, salivation, collapse	Convulsions, coma

TABLE 2 (Continued)

Chemical (Compound)	Routes of Entry	Eye Irritant	Acute Symptoms	Chronic Effects
Acenaphthene	Inhalation, skin absorption, ingestion, skin or eye contact	Yes	Unknown	Unknown
Acenaphthylene	Inhalation, skin absorption, ingestion, skin or eye contact	Yes	Unknown	Tracheobronchitis, hyperemia, edema, necrosis of the epithelium, ulceration in the trachea and bronchi in experimental animals; suspected respiratory carcinogen
Anthracene	Inhalation, skin absorption, ingestion, skin or eye contact	Yes	Skin irritant	Pulmonary epidermoid carcinomas in experimental animals; potential teratogenic and reproductive effects tumors, leukemia reproductive effects
Bis (2-ethylhexyl) phthalate	Skin or eye contact, inhalation, ingestion	Yes	Abdominal pain, nausea, eye irritation, diarrhea, skin irritation, dermatitis, vomiting, coughting, mucous membrane irritation, respiratory irritation, gastrointestinal irritation	Respiratory distress, endocrine gland tumor in experimental animals, testis tumor in experimental animals, reproductive effects in experiemental animals
Chrysene	Skin or eye contact, skin absorption,	No	Skin irritation, dermatitis, respiratory and mucous membrane irritation	None specified
Cyanides	Inhation, ingestion	Yes	Asphyxiation & death can occur, weakness, skin & eye irritant	CVS, CNS, liver, kidney damage
Naphthalene	Inhalation, skin absorption, ingestion, skin or eye contact	Yes	Eye irritation, headache, malaise, nausea, vomiting, sweating, jaundice, dermatitis, diarrhea, itch, visual disturbance, increaded tendon reflexes, confusion, abdominal cramps, excitation, convulsions	Central nervous system depression, corneal damage, comatose, kidney damage, respiratory failure, reproductive effects in experimental animals
Phenanthrene	Inhalation, skin or eye contact	No	Dermatitis, bronchitis, photosensitization, photosensitization, coughing, skin irritation	Respiratory neoplasm, reproductive effects

TABLE 2 (Continued)

Chemical (Compound)	Routes of Entry	Eye Irritant	Acute Symptoms	Chronic Effects
Pyrene	Inhalation, skin or eye contact	No	Respiratory irritation, skin irritation, kidney irritation, dermatitis, coughing	Bronchitis, reproductive effects in experimental animals

GENERAL FIRST AID TREATMENT (A first-aid kit will be kept in the site vehicle)

Eye	Irrigate immediately (A portable eye-wash unit will be kept in the site vehicle)
Skin	Soap wash promptly
Inhalation	Move to fresh air
Ingestion	Get medical attention

Source: Occupational Health Services, 1987 and 1988, HAZARDLINE.

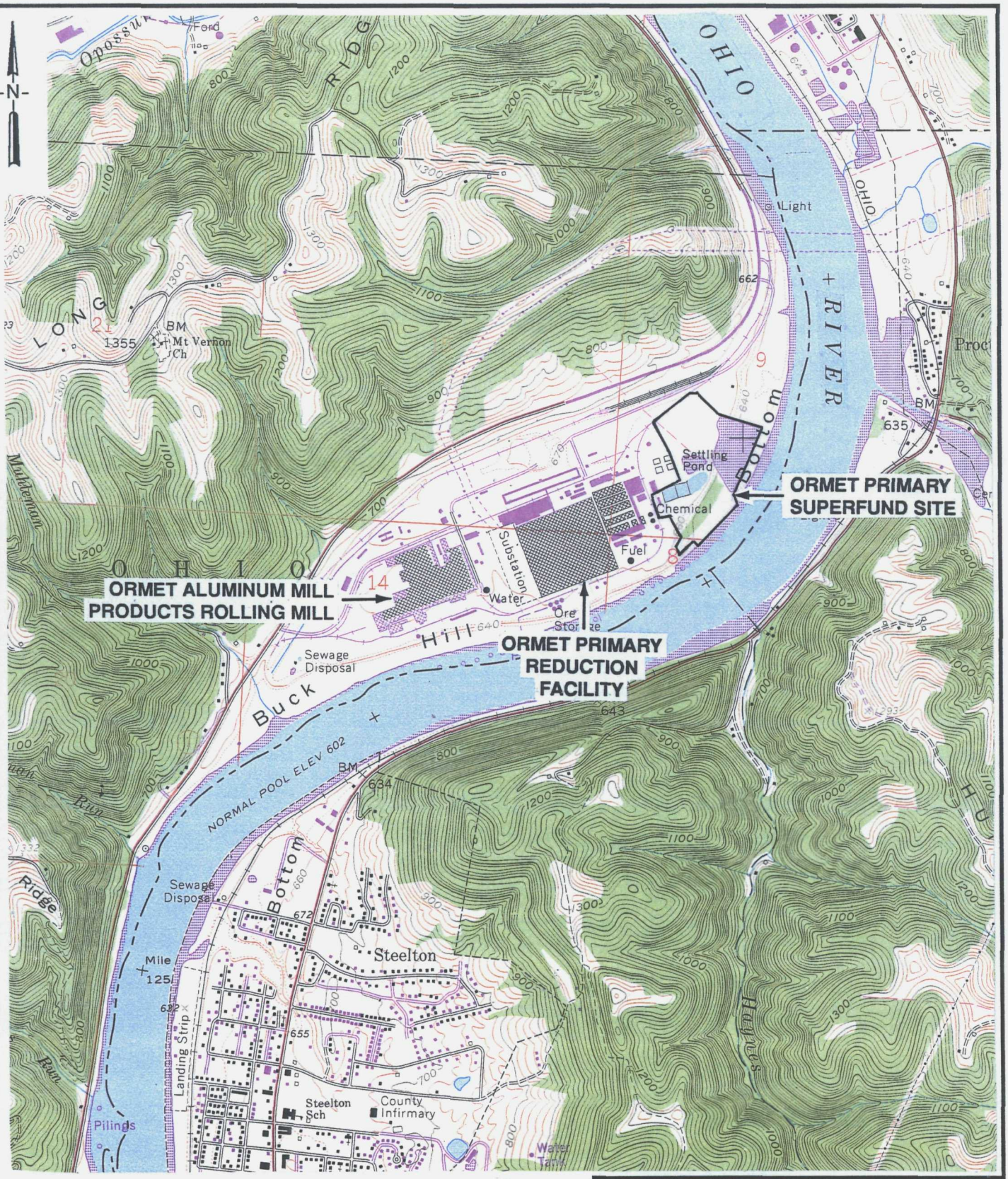
TABLE 3

PERSONAL PROTECTIVE EQUIPMENT REQUIRED FOR SITE ACTIVITIES

Activity	Location	Protective Equipment
Soil boring and sampling, surface water sampling	Sampling sites	• Long-sleeved shirt and pants and/or coveralls • Hard hat • Safety glasses • Safety shoes • Rubber overboots[1] • Viton or Neoprene or latex gloves[2] • Appropriate clothing for weather conditions
Sediment sampling	Sediment sample sites	• Long-sleeved shirt and pants and/or coveralls • Hard hat • Safety glasses • Rubber overboots[1] • Viton or Neoprene or latex gloves[2] • Appropriate clothing for weather conditions • Personal flotation device

[1] For muddy conditions.

[2] Latex where sample contaminants < detection limits; Viton or Neoprene over latex where sample contaminants ≥ detection limits



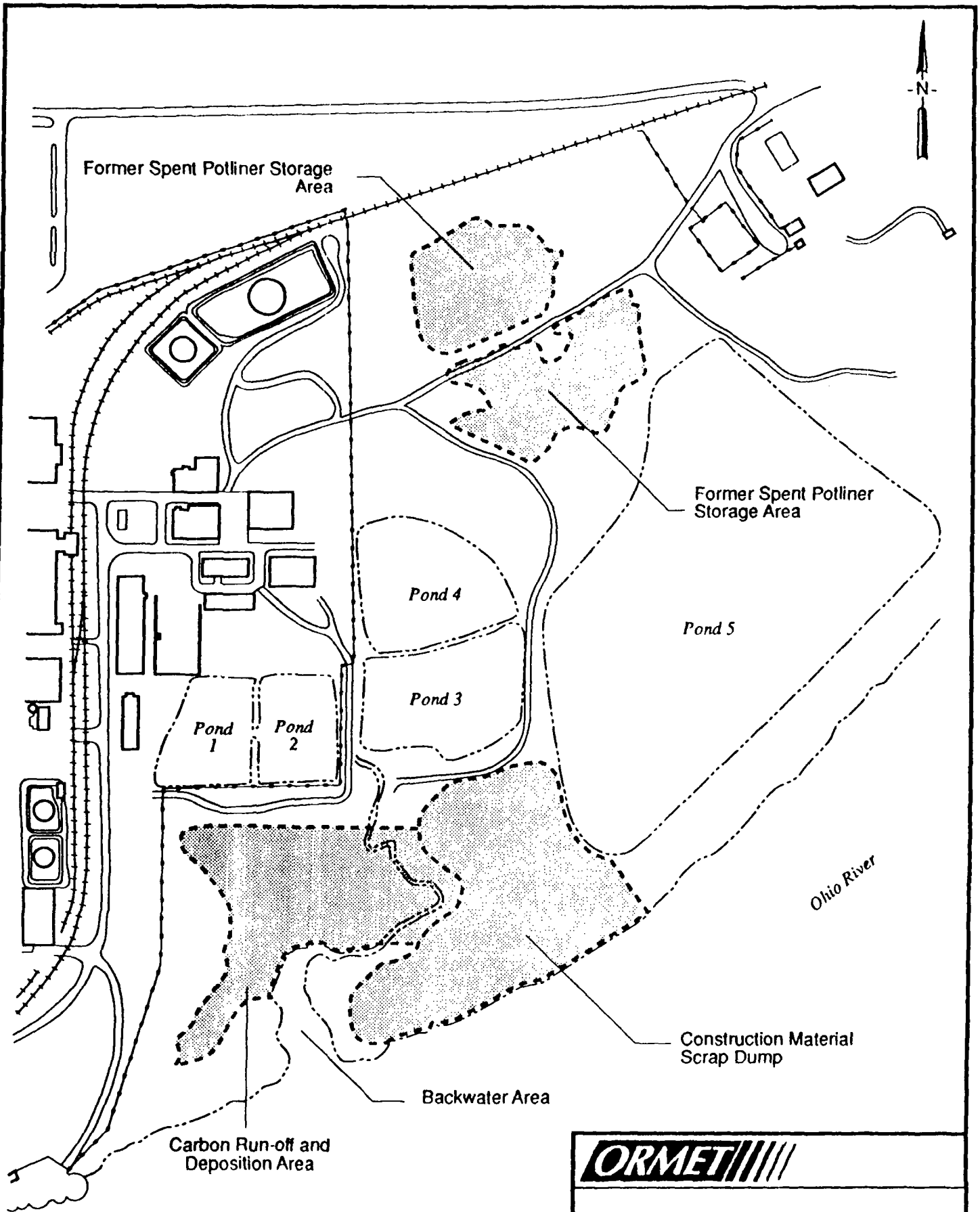
BASE MAP SOURCE: USGS 7 1/2 minute topographic quadrangle map New Martinsville, West Virginia-Ohio 1960, photorevised 1972 and 1976.

ORMET

FIGURE 1
SITE VICINITY MAP

JOB NO. 07983-032-006 Dames & Moore

ORMET-032-5050-006-REMED. DSG. W.P.



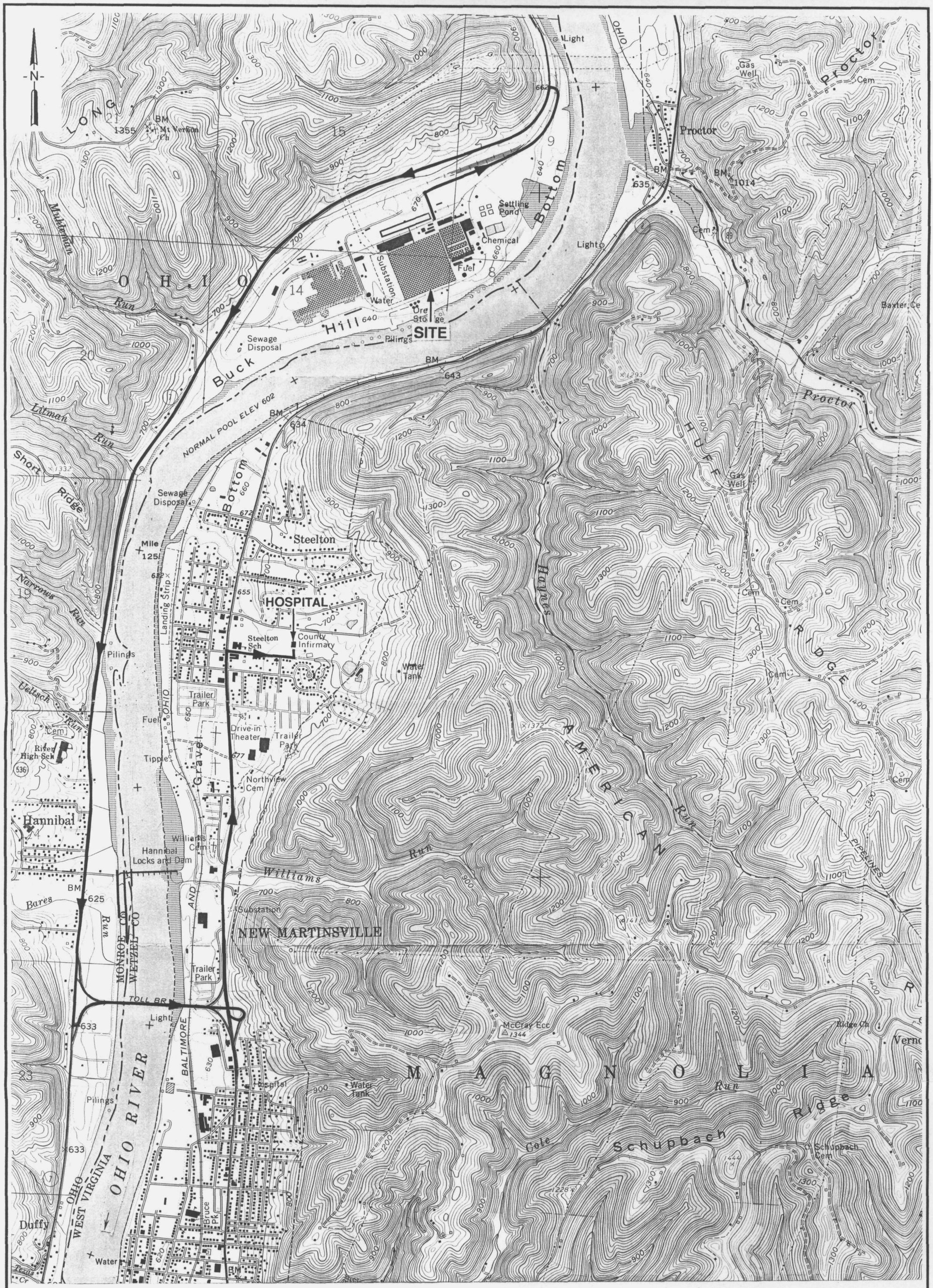
ORMET-032-5050-006-REMED. DBG. W.P.

NOT TO SCALE

ORMET

FIGURE 2
UNIT LOCATION MAP

JOB NO. 07983-032-006 Dames & Moore



BASE MAP SOURCE: USGS 7 1/2 minute topographic quadrangle map New Martinsville, West Virginia-Ohio 1960, photorevised 1972 and 1976.

ORMET

FIGURE 3
HOSPITAL ROUTE PLAN

JOB NO. 07983-032-006 Dames & Moore

APPENDIX A

HEALTH & SAFETY FORMS

Site Safety Briefing
Plan Acceptance
Accident Report
Air Monitoring
Subcontractors Statement of Compliance
Employee Exposure History
Bloodborne Pathogen
Emergency Response Checklist

SITE SAFETY BRIEFINGS

Job Name _____ Number _____

Date _____ Start Time _____ Completed _____

Site Location _____

Type of Work (General) _____

SAFETY ISSUES

Tasks (this shift) _____

_____

Protective Clothing/Equipment _____

_____

Chemical Hazards _____

_____

Physical Hazards _____

_____

Control Methods _____

_____

_____

Special Equipment/Techniques _____

_____

Nearest Phone _____

Hospital Name/Address _____

Special Topics (incidents, actions taken, etc.) _____

_____

ATTENDEES

Print Name	Sign Name
_____	_____
_____	_____
_____	_____
_____	_____

Meeting conducted by: _____

_____

PLAN ACCEPTANCE

INSTRUCTIONS: This form is to be completed by each Dames & Moore employee to work on the subject project work site and returned to the Office Safety Coordinator prior to site activities.

Project No.: _____

Client/Project: _____

Date: _____

I represent that I have read and understand the contents of the above Plan and agree to perform my work in accordance with it.

_____ Signed	_____ Signed
_____ Print Name	_____ Print Name
_____ Date	_____ Date
_____ Signed	_____ Signed
_____ Print Name	_____ Print Name
_____ Date	_____ Date

ACCIDENT REPORT

SUPERVISOR'S REPORT OF ACCIDENT	DO NOT USE FOR MOTOR VEHICLEOR AIRCRAFT ACCIDENTS
TO	FROM TELEPHONE (include area code)
NAME OF INJURED OR ILL EMPLOYEE	
DATE OF ACCIDENT / TIME OF ACCIDENT / EXACT LOCATION OF ACCIDENT	
NARRATIVE DESCRIPTION OF ACCIDENT	
NATURE OF ILLNESS OR INJURY AND PART OF BODY INVOLVED	LOST TIME YES ☐ NO ☐

PROBABLE DISABILITY (Check One)

- ☐ FATAL
- ☐ LOST WORK DAY WITH DAYS AWAY FROM WORK ACTIVITY
- ☐ LOST WORK DAY WITH DAYS OF RESTRICTED
- ☐ NO LOST WORK DAY
- ☐ FIRST AID ONLY

CORRECTIVE ACTION TAKEN BY REPORTING UNIT	
CORRECTIVE ACTION WHICH REMAINS TO BE TAKEN (By whom and by when)	
NAME OF SUPERVISOR	TITLE
SIGNATURE	DATE

AIR MONITORING

GENERAL INFORMATION

Name(s): _____ Background Level: _____

Date: _____ Weather Conditions: _____

Time: _____

Project: _____

Job No.: _____

Estimated Wind Direction: _____

Estimated Wind Speed (i.e., calm, moderate, strong, etc.): _____

Estimated Air Temperature and % Relative Humidity: _____

Location Where Background Level Was Obtained: _____

EQUIPMENT SETTINGS

Range: _____ Alarm Trigger-%LEL: _____

Span Pot: _____ Alarm Trigger-%02: _____

Calibration Gas: _____ Calibration Gas: _____

FIELD ACTIVITIES

Field Activities Conducted: _____

_____

_____

BACKGROUND LEVEL: _____ LOCATION: _____

Sample No.	Time	Duration (Minutes)	Location	Reading (ppm)	Comments
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

SUBCONTRACTOR
STATEMENT OF COMPLIANCE

This document is designed to permit the Dames & Moore Project Manager to evaluate a subcontractor's compliance with the health and safety aspects of the subcontractor agreement. The Project Manager completes the top portion of this document, and provides a copy of the document to each subcontractor who will be participating in project field activities. The subcontractor completes the second portion of the document, signs it, and returns it to the Dames & Moore Project Manager prior to the start of work.

Project Name/Location _____

Job Number _____

Project Manager/Location _____

Subcontractor _____

Tasks _____

Project Dates _____ through _____

SUBCONTRACTOR

Subcontractor certifies that al its personnel assigned to this project have received 40-hour health and safety training per the requirements of 29 CFR 1910.120(e) _____ Subcontractor Initials

Subcontractor certifies that its field supervisor has completed 8 hours of supervisor training that meets the requirements of 29 CFR 1910.120(e)(4).

_____ _____

Field Supervisor's Name (Print) Subcontractor Initials

Subcontractor certifies that all of its personnel assigned to this project are participating in a medical surveillance program that meets the requirements of 29 CFR 1910.120(f). _____ Subcontractor Initials

Subcontractor understands that it is responsible for providing a site-specific health and safety plan for this project that meets the requirements of 29 CFR 1910.120(b). _____ Subcontractor Initials

Subcontractor initials here if it will provide its own health and safety plan (Dames & Moore will provide OSHA-requested site-specific information). _____ Subcontractor Initials

OR

Subcontractor initials here if requesting Dames & Moore to prepare health and safety plan for subcontractor's use. _____ Subcontractor Initials

_____

Subcontractor's Representative (Print)

_____

Signature

EMPLOYEE EXPOSURE HISTORY

Employee Name: _____

Job Name: _____

Job Number: _____

Date(s) From/To: _____

Hours on Site: _____

Contaminants (Suspected/Reported):

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

(See Attached Laboratory Analysis)

BLOODBORNE PATHOGENS INCIDENT EVALUATION REPORT

Employee Name: _____

Office/Location: _____

Incident Date: _____ Incident Time: _____ a.m./p.m.

Did the employee render First Aid or CPR with blood or other potentially infectious materials present: ☐

Did an exposure incident occur? ☐ If yes, describe here and complete the following section.

_____

_____

Circumstances: Supervisor's assessment of the following control measures used at the time of the exposure (see definitions below):

Route of Exposure: _____

_____

_____

Engineering: _____

_____

_____

Work Practice: _____

_____

_____

Personal Protective Equipment: _____

_____

_____

Reason for failures of the control measures or failure to comply with recommended protective measures:

_____

_____

Measure taken to minimize the reoccurrence of exposure incident: _____

_____

_____

Supervisor's Signature: _____

Definitions:

Exposure Incident means a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of an employee's duties.

Engineering Control means controls (e.g., sharps, disposal containers, self-sheathing needles) that isolate or remove the bloodborne pathogens hazard from the workplace.

Work Practice Controls means controls that reduce the likelihood of exposure by altering the manner in which a task is performed (e.g., prohibiting recapping of needles by a two-handed technique.)

Personal Protective Equipment is specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes not intended to function as protection against a hazard are ***not*** considered to be personal protective equipment.

Routing Requirements: Medical Surveillance Program Manager - DEN
Division Health and Safety Manager

EMERGENCY RESPONSE CHECKLIST

In an Emergency	Yes	No
Confirm the reported incident	☐	☐
Evacuate and secure the area	☐	☐
Render first aid/emergency medial care	☐	☐
Notify promptly:		
Project Manager	☐	☐
Fire Department	☐	☐
Police Department	☐	☐
Nearest Hospital or Medical Care Facility	☐	☐
Start Documentation	☐	☐
If a spill or leak occurs:		
Don the proper PPE	☐	☐
Stop the source	☐	☐
Contain the spill	☐	☐
Clean up the spill	☐	☐
Upon evacuting, take attendance at the assembly area	☐	☐
Authority given:		
Leave the site	☐	☐
Restart the operations	☐	☐
Debrief and document the incident	☐	☐
A copy of the document submitted to the DHSM	☐	☐